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Education for Students with Cerebral Palsy on Reducing Drooling through Oral Motor Exercise

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ABSTRACT

This study aims to reduce drooling through oral motor exercises for cerebral palsy students in Special School in Padang, Indonesia. This study used quantitative research methods with a Single Subject Research (SSR) approach with A-B-A design from February to September 2021. The research data was collected by observing one child with cerebral palsy, recording events, and assessing oral motor exercise. All data was analyzed descriptively using visual graph analysis tools. Overall, the results showed that oral motor exercise effectively reduced drooling in cerebral palsy students. This was evidenced by the mean level obtained in the baseline-1 (A1) condition, which was 14.66; in the intervention condition (B), it decreased to 8.15; and in the baseline-2 (A2) condition, it decreased again to 3. Then, the results of data analysis in the conditions and between conditions also showed a tendency toward stability, an estimated directional tendency, and data trace and level changes that decreased positively. The percentage of overlap in the baseline-1 (A1) condition is 0%, while the percentage of overlap in the baseline-2 (A2) condition is 15% so the hypothesis can be accepted. These findings imply that the selection of oral motor exercises effectively reduces drooling in students with cerebral palsy.

I. Introduction

Education for students with special needs is focused on the learning process and their needs, such as intervention services to adjust their obstacles. Students with special needs are different from regular students. Student with special needs is characterized by something less or more in themselves (Andrew et al., 2018; Cantero et al., 2021; Gulati & Sondhi, 2018; Gupta, 2001; Patel et al., 2020). Due to their developmental disorders and abnormalities, students with special needs require special treatment (Caselli et al., 2017; Garfinkle et al., 2020; Gómez-Pérez et al., 2021; Zhang et al., 2022). One of the students with special needs is a child with a disability (Alsamour et al., 2018; Cavo & kurti, 2017; Dhungel et al., 2021; Flynn, 2021; Lashkari, 2019; Morris et al., 2016; Ravi et al., 2020).

Several students with disabilities are experiencing the inability or partial paralysis of the limbs to carry out their functions normally (Aguiar et al., 2019; Dembo et al., 2022; Hoyle et al., 2021; Ku & Jin, 2022; Lee, 2021; Martino et al., 2022; Xia et al., 2021). It is caused by injury, disease, or incomplete growth (Abdullah et al., 2021; Foster et al., 2021; Nurhastuti et al., 2019; Peña & Payne, 2022). One of the classifications for students with disabilities is cerebral palsy (Casellas Vidal & Castan Campanera, 2017; Papadimitriou et al., 2021; SILVA et al., 2017; Verschuren et al., 2018; Yi et al., 2019).

A cerebral palsy child is a child who has a non-progressive disorder or damage to the brain that occurs in the development of the fetal or infant brain (Marpole et al., 2020; Mårtensson et al., 2021; Pearson et al., 2019; Polack et al., 2018). Brain damage can impact the development of communication barriers in students with cerebral palsy because there is a disturbance in the brain that regulates speech (Lima et al., 2022; Maggioni & Araújo, 2020).

Communication barriers occur in students with cerebral palsy due to their inability to speak clearly due to the stiffness that occurs in their speech-motor muscles (Anand & Karthikbabu, 2021; Boel et al., 2019; Ruiz Brunner et al., 2020). The speech motor muscles that experience stiffness includes the tongue, lips, cheeks, and jaw, which can cause articulation errors in students (Aydin et al., 2018; Gross et al., 2020; Hammam et al., 2021; Shim et al., 2022). This can have an impact on the problem of acceptance for parents who have student with cerebral palsy because some parents are less able to accept their student with cerebral palsy (Farajzadeh et al., 2021; Irwin et al., 2019; Longo et al., 2017; Mak et al., 2019; Mutlu et al., 2018; Nurhastuti et al., 2019; Ward et al., 2014).

However, all students in this world are the same, including students with cerebral palsy who experience limitations and various obstacles (Jahan et al., 2021; Lubis & Damri, 2018; Putri et al., 2020; Sadowska et al., 2020; Santos et al., 2018). Students with cerebral palsy also have difficulty sucking, chewing, and swallowing because their oral motor skills are dysfunctional (Contreras et al., 2019; Kamate et al., 2018; Langlois et al., 2020; Rensfeldt Flink et al., 2021). Another problem often experienced by students with cerebral palsy is drooling (Chaléat-Valayer et al., 2016; Delsing et al., 2019; Myles, 2020; Sousa et al., 2018).

Drooling is a condition where the child has difficulty controlling saliva, resulting in saliva coming out past the lip line (Bard-Pondarré et al., 2022; Marinone et al., 2017; McInerney et al., 2021). Saliva can be a medium for bacteria to move, creating uncomfortable conditions for activities and transmitting diseases (Beranger et al., 2020; Nascimento et al., 2021; Rotteval, 2011).

Drooling in students with cerebral palsy can be caused by several things, such as impaired coordination between the muscles of the lips, tongue, palate, and face, which is the oral swallowing phase, and impaired oral motor sensory control (Khajuria et al., 2020; Mikami et al., 2019; Yilmaz et al., 2004). In addition, drooling is also caused by an impaired tongue push-back reflex and difficulty swallowing when saliva production is excessive (hypersalivation) (Chen & Daniel, 2021; Collins et al., 2020; Gutierrez et al., 2019).

Based on preliminary studies conducted in January–February 2021 at Special School Wacana Asih Padang, observations were made as well as the learning process in class VIII, where three (3) students were always present and active in the learning process, but what became the primary concern and focus was knowing that one of the three students was a cerebral palsy child. When the learning occurs, the child experiences drooling, or drooling, so much that it wets the lips, chin, and clothes; even the drooling that occurs in students during learning reaches 20 times.

When the problem is discussed with the teacher, especially the class teacher, some information is obtained, including the child's lack of awareness when saliva comes out of the mouth. He has difficulty swallowing saliva, speaking, speaking with incorrect articulation, having limited lip, tongue, and jaw movements, and even experiencing low academic ability.

The teacher has tried to deal with the child's drooling condition by reminding him or her to clean the saliva with a washcloth. However, these efforts cannot be said to be effective because the reality is that students continue to experience drooling during learning, so there is no special treatment for dealing with student's drooling due to limited time and costs.

Observing this problem, in-depth observation of the child's movements during learning took place, and it was found that the child could clean the saliva that came out of his mouth independently. However, when baseline-1 (A1) observations were made for three days, the frequency of drooling experienced by students was still high, namely 14 times in the first session, 15 times in the second session, and 15 times in the third session. If this situation does not receive special treatment, it can distress the child and affect the child's health later. Therefore, oral motor exercise is applied to treat drooling conditions in this cerebral palsy student.

Oral motor exercise is an exercise that focuses on the use and function of the tongue, lips, and jaw through coordination and strength movement exercises to improve the function of the tongue, lips, and jaw (Levitt & Addison, 2018; Widman-Valencia et al., 2021). Oral motor exercise is a strategy to prepare the muscles around the mouth to be able to move and control the oral motor to improve functional responses to movement, strength, pressure, and control of motion on the tongue, lips, and jaws (Dong & Wen, 2021; Mei et al., 2022; Souza et al., 2021). This exercise aims to improve swallowing reflection tone and movement in the organs around the mouth (tongue, lips, cheeks, and jaw) so that they function normally. It is expected to facilitate students in controlling drooling (Chaléat-Valayer et al., 2016; Delsing et al., 2019; Gubbay & Marie Blackmore, 2019; Marpole et al., 2020).

Oral motor exercise techniques that can be done to reduce drooling in students with cerebral palsy include tongue push-ups (to strengthen the tongue muscles), use of sticks (to improve movement and coordination), tongue on cheek (to increase tongue strength), brushing (to increase awareness and tactile stimulation of the lips), whistle (to increase lip strength), puffer-smile (to increase the scope of motion in the jaw), jaw curls (to increase the scope of motion in the jaw), and sucking exercise (to increase palate strength) (Limbrock, 2021; Ratmawati, 2018; Rocha et al., 2022).

Related to the above problems, research on cerebral palsy students has been widely studied and researched by previous researchers. However, after analyzing more deeply and in detail, research on the use of oral motor exercise on drooling in cerebral palsy students, specifically in Padang City, Indonesia, has not been discussed. So, this research needs to be carried out and developed within the framework of enriching the literature and exploring the style and diversity of teachers and parents to overcome drooling in students with cerebral palsy.

II. Method

This research uses quantitative methods with a single-subject research (SSR) approach. Single Subject Research (SSR) is experimental research with a single data analysis using the subject of one person, two people, or more (Ana, 2016; PutrI et al., 2020).

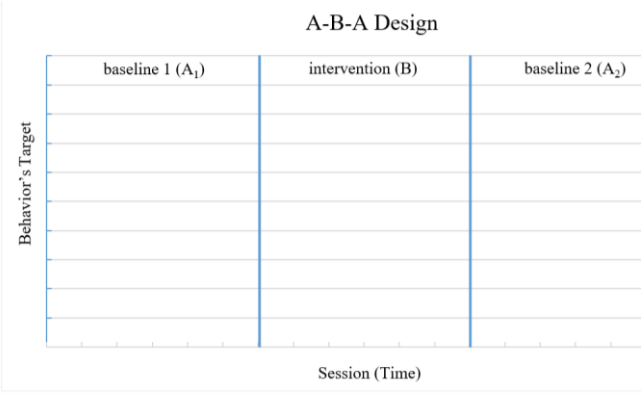

Fig. 1. A-B-A Design

The research data were collected from a cerebral palsy child in one of the special schools in Padang City, Indonesia, through observation by recording the occurrence and oral motor exercise assessment of drooling in the cerebral palsy child (ZF). The data was collected from February until September 2021. All data were analyzed descriptively using visual graph analysis tools. Visual analysis of graphic data is processed by entering data into a graph; then, the data is analyzed based on data that has been obtained in baseline-1 (A1) conditions, intervention conditions (B), and conditions at baseline-2 (A2). This way of analyzing data is one of the techniques for analyzing single-subject research.

III. Results and Discussion

Result

This study aims to analyze the effectiveness of oral motor exercise in reducing drooling in cerebral palsy students (ZF) in one of the special schools in Padang City, Indonesia. The design used for oral motor exercise is the A-B-A design. Based on the results of the data analysis conducted, the overall oral motor exercise used in this study has succeeded in reducing the drooling that occurs in cerebral palsy students (ZF). Three aspects of the results of this study include: (1) the state of student's drooling at baseline one before oral motor exercise; (2) the results of the analysis of student's scores after being given intervention (B) or treatment of drooling using oral motor exercise; and (3) the results of the baseline 2 (A2) analysis of student's drooling scores without giving oral motor exercise treatment (Figure 2).

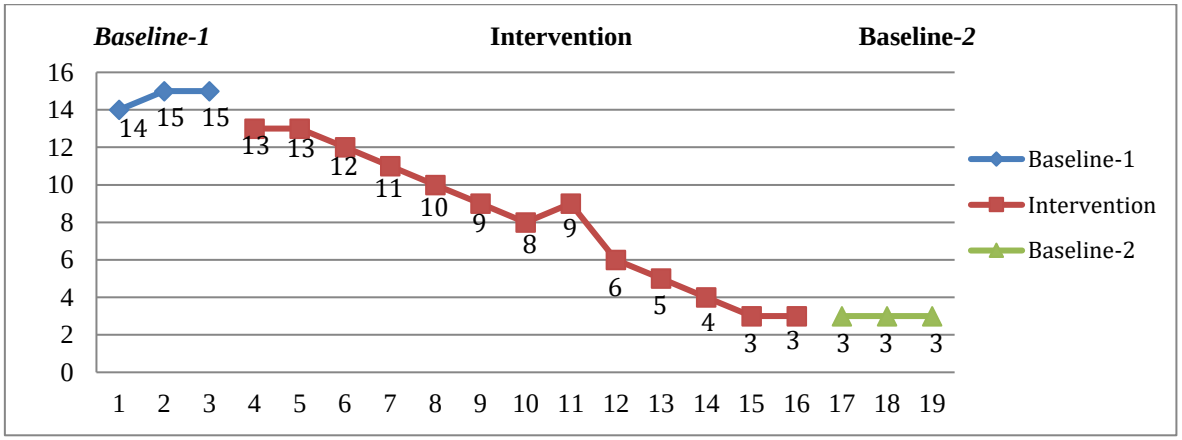

Fig. 2. Trend in the Direction of Drooling Frequency Data for Cerebral Palsy Student (ZF) in Baseline-1 (A1), Intervention (B), and Baseline-2 (A2) Conditions

The results of the analysis of research findings obtained from observing baseline-1 (A1) observations, providing intervention (B) or treatment in the form of oral motor exercise, and observing and measuring baseline-2 (A2) after not being given intervention or treatment for cerebral palsy student (ZF) Then the results of data analysis in conditions and between conditions, estimation of directional trends, data traces, and level changes, as well as the percentage of overlap in each baseline, are displayed.

Baseline-1 (A1) condition is the initial condition or score of a student's drooling before being given intervention (B) or treatment in the form of oral motor

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exercise for a student with cerebral palsy (ZF). At this stage, three meeting sessions were held, namely February 15–17, 2021, with a time of 2x30 minutes, to note the condition or initial score of drooling in a cerebral palsy student (ZF) without providing intervention or treatment, so that the initial data was obtained 14 times in the first session, 15 times in the second session, and 15 times in the third session presented in Table 1.

Table 1. Drooling Frequency Data of Cerebral Palsy Student in Baseline-1 Condition

Date	Session	Time start -stop	Tally the occurrence of target behavior (drooling)	Drooling Frequency
February 15, 2021	1	10.00 – 10.30	///// ///// ////	14
February16, 2021	2	10.00 – 10.30	///// ///// /////	15
February 17, 2021	3	10.00 – 10.30	///// ///// /////	15

Based on the data in Table 1, it can be said that the frequency of student's drooling (ZF) tends to stay the same. The child's frequency of drooling can show this in the second and third sessions. This means that the child (ZF) still has difficulty controlling the saliva from his mouth. To clarify the data obtained in the baseline-1 (A1) condition, the following graphical display of the frequency of drooling in students (ZF) is presented in Figure 3.

Second, intervention condition (B) or treatment, namely the condition or score of student's drooling after being given intervention (B) or treatment in the form of oral motor exercise for cerebral palsy student (ZF), At this stage, 13 sessions were held, namely August 14–27, 2021, with a time of 2x30 minutes, so that the results or achievement scores were obtained, including 13 times the 4th session, 13 times the 5th session, 12 times the 6th session, 11 times the 7th session, ten times the 8th session, nine times the 9th session, eight times the 10th session, nine times the 11th session, six times the 12th session, five times the 13th session, four times the 14th session, three times the 15th session, and three times the 16th session. Based on the observations for 13 sessions, the data obtained showed a stable state in the 15th and 16th sessions. Therefore, observation in this intervention (B) condition was stopped at the 16th session and continued with the baseline-2 condition.

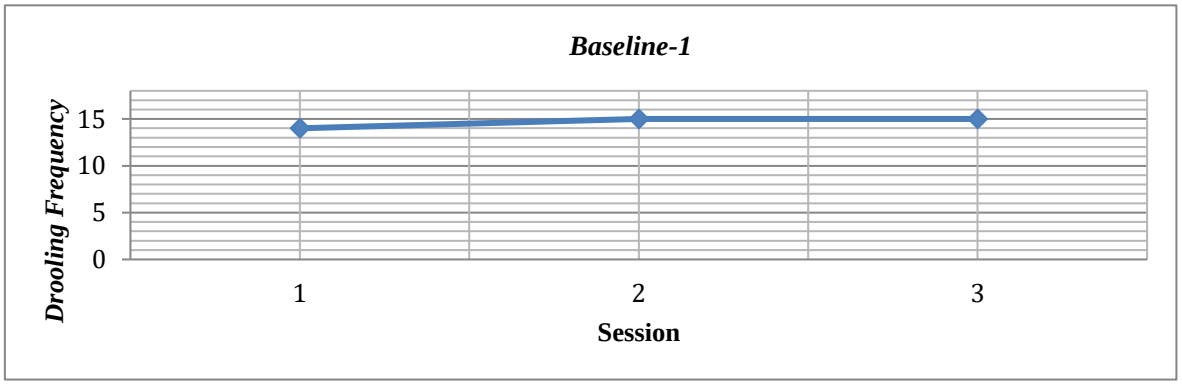

Fig. 3. Display of Drooling Frequency in Cerebral Palsy Student (ZF) in Baseline-1 (A1) Condition

Table 2. Drooling Frequency Data on Cerebral Palsy, Students in Intervention Conditions.

Date	Session	Time start-stop	Tally the occurrence of target behavior (drooling)	Drooling Frequency
August 14, 2021	4	10.00 – 10.30	///// ///// ///	13
August 15, 2021	5	10.00 – 10.30	///// ///// ///	13
August 16, 2021	6	10.00 – 10.30	///// ///// //	12
August 18, 2021	7	10.00 – 10.30	///// ///// /	11
August 19, 2021	8	10.00 – 10.30	///// /////	10
August 20, 2021	9	10.00 – 10.30	///// ////	9
August 21, 2021	10	10.00 – 10.30	///// ///	8
August 22, 2021	11	10.00 – 10.30	///// ////	9
August 23, 2021	12	10.00 – 10.30	///// /	6
August 24, 2021	13	10.00 – 10.30	/////	5
August 25, 2021	14	10.00 – 10.30	////	4
August 26, 2021	15	10.00 – 10.30	///	3
August 27, 2021	16	10.00 – 10.30	///	3

The graphical display of the drooling frequency of cerebral palsy students (ZF) in the intervention condition can be seen in Figure 4.

Third Baseline-2 Condition (A2) is a condition in which observations and measurements of drooling in cerebral palsy student (ZF) are made again after no longer being given oral motor exercise intervention or treatment, or it can be said that the intervention (B) has been stopped. At this stage, three meeting sessions were held, namely September 1–3, 2021, with a time of 2x30 minutes. During the re-observation on the drooling of cerebral palsy students (ZF) using oral motor exercise, the results were obtained three times in each session, namely the 17th, 18th, and 19th sessions. Therefore, observation in this baseline-2 (A2) condition was stopped at the 19th session.

The graphical display of the frequency of drooling of cerebral palsy students (ZF) in baseline-2 (A2) conditions can be seen in Figure 5.

Table 3. Data on the Drooling Frequency of Cerebral Palsy Students in Baseline-2 (A2) Conditions

Date	Session	Time start-stop	Tally the occurrence of target behavior (drooling)	Drooling Frequency
September 1, 2021	17	10.00 – 10.30	///	3
September 2, 2021	18	10.00 – 10.30	///	3
September 3, 2021	19	10.00 – 10.30	///	3

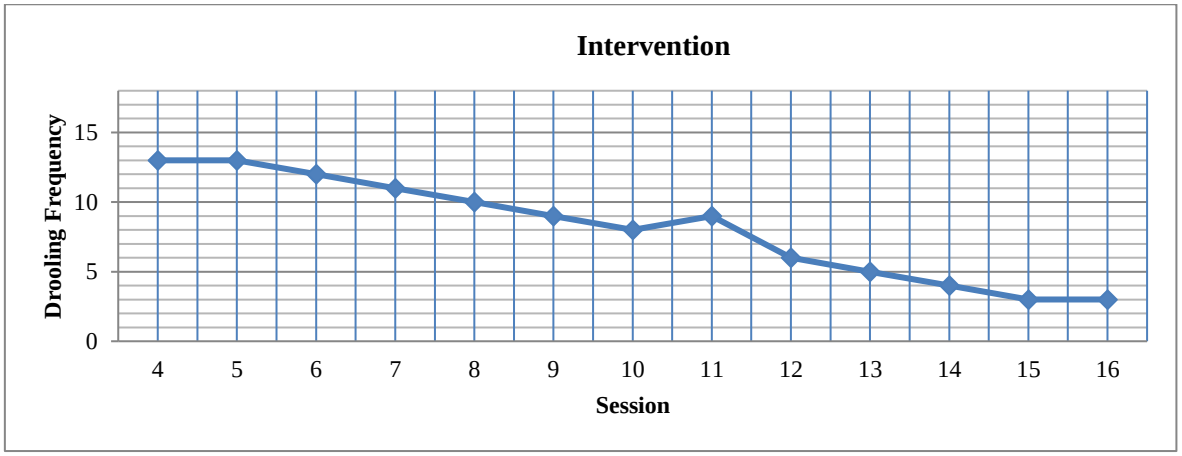

Fig. 4. Display of Drooling Frequency of Cerebral Palsy Child (ZF) in Intervention Condition (B)

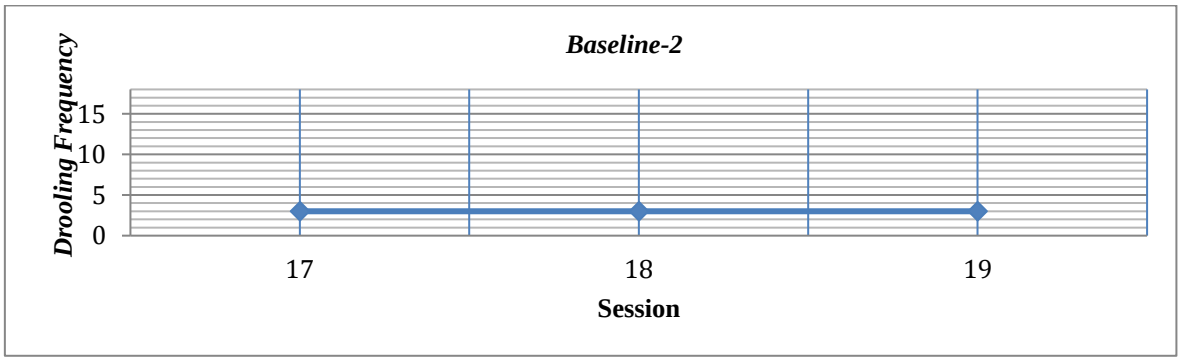

Fig. 5. Display of Drooling Frequency in Cerebral Palsy Student (ZF) in Baseline-2 (A2) Condition

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A summary of the data obtained in all conditions, consisting of baseline-1 (A1), intervention (B), and baseline-2 (A2) conditions, can be seen in Table 4.

Table 4. Accumulated Data on Drooling Frequency of Cerebral Palsy Student (ZF) in Baseline-1 (A), Intervention (B), and Baseline-2 (A) Conditions

Baseline-1 (A1)								Intervention (B)								Baseline-2 (A2)		
14	15	15	13	13	12	11	10	9	8	9	6	5	4	3	3	3	3	3

Furthermore, the estimated direction tendency in the baseline-1 (A1) condition tends to increase (-), the direction tendency in the intervention condition (B) tends to decrease (+), and the direction tendency in the baseline-2 (A2) condition is flat (=). Judging from the tendency of data stability, the mean level obtained in the baseline-1 (A1) condition is 14.66, with a tendency of 100% stability (stable). In the intervention condition (B), the mean level is 8.15, with a stability tendency of 23% (variable).

In the baseline-2 (A2) condition, a mean level of 3 was obtained with a tendency of 100% stability (stable). Based on the data-trace in the baseline-1 (A1) condition, there was an increase with a worsening meaning; in the intervention condition (B), there was a decrease with an improving meaning; and in the baseline-2 (A2) condition, there was no change. Conversely, as seen from the level of stability and the range obtained in the baseline-1 condition (14, 15), in the intervention condition (3, 13), and in the baseline-2 condition (3, 3), Then the level change obtained in the baseline-1 (A1) condition is (-1), in the intervention condition (B) is (+10). In the baseline-2 (A2) condition is (=0). To clarify all components of the analysis under conditions, Table 5 summarizes the results of the analysis under conditions.

Table 5. Summary of Visual Analysis Results in Condition of Drooling Frequency Data

No	Condition	Baseline-1 (A1)	Intervention (B)	Baseline-2 (A2)
1	Condition length	3	13	3
2	Estimation of the directional tendency	(-)	(+)	(=)
3	Trend of Data Stability	100% Stable	23% Variable	100% stable
4	Trace data	(-) (Increase)	(+) (Decrease)	(=) (Flat)
5	Stability level and range	Stable (14– 15)	Variable (3– 13)	Stable (3– 3)
6	Level change	15– 14 (-1)	13– 3 (+10)	3– 3 (=0)

The analysis between conditions found that changes in the direction of drooling frequency in baseline-1 (A1) conditions tended to increase. In intervention conditions, B tends to decrease. Meanwhile, in the baseline-2 condition, the directional tendency tends to flatten. So, it can be concluded that the frequency of drooling experienced by students tends to decrease. The effect shows an improving effect (+).

Based on changes in stability trends, it is found that the frequency of student's drooling is still high, namely 14, 15, and 15 times in baseline-1 (A1) conditions. In the intervention condition (B), the frequency of drooling experienced by the student decreased to three times in the last session after being given intervention in the form of oral motor exercise. In baseline-2 conditions, the frequency of drooling experienced by students tends to remain the same, namely three times. This causes changes in stability trends from baseline-1 conditions to intervention conditions (B) to be stable to variable and from intervention conditions (B) to baseline-2 conditions to be variable to stable.

Judging from the change in level from baseline-1 condition (A1) to intervention condition (B), it is improving, which is indicated by an increase of 2 points. While the change in level from the intervention condition (B) to the baseline-2 condition (A2) is settled, which is indicated by no increase or decrease in points, based on the percentage of overlap from baseline-1 (A1) to intervention conditions (B), it is 0%. At the same time, the percentage of overlap from intervention condition (B) to baseline-2 condition (A2) is 15%. Therefore, the smaller the percentage of overlap, the better the effect of the intervention. This means that intervention in the form of oral motor exercise has a good effect on reducing drooling in students with cerebral palsy. The analysis results between conditions can be seen in Table 6 to clarify the data.

Table 6. Summary of Intercondition Visual Analysis Results

Condition Comparison	B/(A1)	(A2)/B
Number of changed variables	1	1
Changes in directional trends and their effects	(-) (+)	(+) (=)
Change in stability trend	Stabil ke Variabel	Variabel ke Stabil
Level change	15 – 13 (+2)	3-3 (=0)
Overlap percentage	0%	`15%

Education for students with special needs is focused on the learning process and their needs, such as intervention services to adjust their obstacles. Drooling is the most common disorder experienced by students with cerebral palsy. Drooling is a condition where the child has difficulty controlling saliva, which results in saliva coming out past the lip line. The saliva that comes out can be a medium for bacteria to move and create uncomfortable conditions for activities. Drooling in cerebral palsy can be caused by several things, such as impaired coordination between the muscles of the lips, tongue, palate, and face, which is the oral swallowing phase. Therefore, drooling is a condition that needs to be addressed. Previous research explained that appropriate intervention can reduce obstacles in cerebral palsy (Jackman et al., 2022; Longo et al., 2020; Novak et al., 2020).

Especially at the Wacana Asih Special School Padang, one child with cerebral palsy experiences drooling. Therefore, oral motor exercise was chosen as the solution. Then, the research was conducted using the single-subject research (SSR) approach. This study was conducted to prove whether oral motor exercise effectively reduces drooling in cerebral palsy students at Special School Wacana Asih Padang, Indonesia. This study conducted 19 meetings (19 sessions) in three different conditions. In baseline-1 (A1) conditions, three sessions were conducted; in intervention conditions (B), 13 sessions were conducted; and finally, in baseline-2 (A2) conditions, three sessions were conducted. The results show that the frequency of drooling experienced by students (ZF) before the intervention is still relatively high. However, in the intervention condition, the frequency of drooling decreases with each session. Then, after no longer being given treatment, showing fixed and stable results.

There is a decrease in the mean level in each condition. The mean level in the baseline-1 (A1) condition was 14.66, then the mean level in the intervention condition (B) decreased to 8.15, then decreased again to 3 in the baseline-2 (A2) condition. Furthermore, the percentage of overlap from the baseline-1 (A1) condition to the intervention condition (B) is 0%. At the same time, the percentage of overlap from intervention condition (B) to baseline-2 condition (A2) is 15%. So, the results of this study have proven that oral motor exercise is significantly effective in reducing drooling in cerebral palsy students at Special School Wacana Asih Padang, Indonesia.

After analyzing various previous studies relevant to this context and issue, several opinions from researchers found that oral motor exercise effectively reduces drooling conditions in cerebral palsy students. Even oral motor exercise can improve speech in spastic dysarthria students, improve the function of oral motor organs in adolescents who are physically and intellectually challenged, improve swallowing ability, improve eating ability, and reduce and even eliminate drooling in students and adolescents (Bavikatte et al., 2012; Johnson et al., 2014; McDowell et al., 2017).

IV. Conclusion

Education for a student with special needs is focused on the learning process and their needs, such as intervention services for their obstacles. Oral motor exercise is an exercise that focuses on the use and function of the tongue, lips, and jaw through coordination and strength movement exercises to improve the function of the tongue, lips, and jaw. Based on the results of data analysis and discussion of the use of oral motor exercise on drooling in cerebral palsy students at the Special School Wacana Asih Padang, Padang City, Indonesia, it can be concluded that oral motor exercise is proven effective for reducing drooling in cerebral palsy student. The decreased mean level in each condition can prove this, Whereas the intervention (B) and baseline-2 (A2) conditions have a mean level that is lower than the mean level in the baseline-1 (A1) condition. Then, the results of data analysis in conditions and between conditions show a trend of stability, estimated direction trends, data traces, and changes in levels that decrease positively and have small data overlaps. So, it can be concluded that the more the results of the assessment of oral motor exercise tests on students increase, the lower the frequency of drooling they experience. Acknowledgments: The authors would like to express their deepest gratitude to the entire research team for contributing fully during the research up to the article's writing. High appreciation is also given to the experts who have taken the time to assess the instruments used. Furthermore, to the school, teachers, and students at the place where this research was conducted

References

Abdullah, M. M., Neville, R. D., Donnelly, J. H., & Lakes, K. D. (2021). Are parental depressive symptoms related to the sleep quality and physical activity of their children with developmental disabilities? *Research in Developmental Disabilities, 119*, 104091. https://doi.org/10.1016/j.ridd.2021.104091

Aguiar, A. L., Aguiar, C., Cadima, J., Correia, N., & Fialho, M. (2019). Classroom quality and children's social skills and problem behaviors: Dosage and disability status as moderators. *Early Childhood Research Quarterly*, *49*, 81–92. https://doi.org/https://doi.org/-10.1016/j.ecresq.2019.05.005

Alsamour, M., Gilliaux, M., Renders, A., Lejeune, T., Stoquart, G., & Edwards, M. G. (2018). Does observation of a disabled child's action moderate action execution? Implication for the use of Action Observation Therapy for patient rehabilitation. *Cortex*, *107*, 102–109. https://doi.org/10.1016/-j.cortex.2017.11.003

Anand, B., & Karthikbabu, S. (2021). Effects of additional inspiratory muscle training on mobility capacity and respiratory strength for school-children and adolescents with cerebral palsy: a randomized controlled trial. *Brazilian Journal of Physical*

Therapy, *25*(6), 891–899. https://doi.org/10.1016/-j.bjpt.2021.10.006

Andrew, M. J., Parr, J. R., Montague-Johnson, C., Laler, K., Qi, C., Baker, B., & Sullivan, P. B. (2018). Nutritional intervention and neurodevelopmental outcome in infants with suspected cerebral palsy: the Dolphin infant double-blind randomized controlled trial. *Developmental Medicine & Child Neurology*, *60*(9), 906–913. https://doi.org/10.1111/dmcn.13586

Aydin, K., Aydin, K., Akbas, Y., Unay, B., Arslan, M., Cansu, A., Sahin, S., Dilber, C., Gungor, O., Aksoy, A., Yuksel, D., Gurkas, E., Okuyaz, C., Cobanogulları, M., Eldes, N., Komur, M., Celik, T., Per, H., Acer, H., … Sarioglu, A. A. (2018). A multicenter cross-sectional study to evaluate the clinical characteristics and nutritional status of children with cerebral palsy. *Clinical Nutrition ESPEN*, *26*, 27–34. https://doi.org/10.1016/j.clnesp.-2018.05.002

Bard-Pondarré, R., Roumenoff, F., Julien, C., Grguric, G., Porte, M., Boulay, C., Bourg, V., & Chaléat-Valayer, E. (2022). Validity, reliability, and responsiveness to change of the French version of the drooling impact scale. *Disability and Rehabilitation*, *44*(5), 788–794. https://doi.org/10.1080/09638288.2020.1777471

Bavikatte, G., Sit, P. L., & Hassoon, A. (2012). Management of drooling of saliva. *Br J Med Pract*, *5*(1), 50712.

Beranger, T., Pierache, A., Loffer, Z., Tiffreau, V., Ferri, J., & Nicot, R. (2020). Efficacy of injections of botulinum toxin-A for improving drooling and quality of life in disabled patients. *Annals of Physical and Rehabilitation Medicine*, *63*(6), 568–569. https://doi.-org/10.1016/j.rehab.2019.11.004

Boel, L., Pernet, K., Toussaint, M., Ides, K., Leemans, G., Haan, J., Van Hoorenbeeck, K., & Verhulst, S. (2019). Respiratory morbidity in children with cerebral palsy: an overview. *Developmental Medicine & Child Neurology*, *61*(6), 646–653. https://doi.org/10.1111/-dmcn.14060

Cantero, M. J. P., Medinilla, E. E. M., Martínez, A. C., & Gutiérrez, S. G. (2021). Comprehensive approach to children with cerebral palsy. *Anales de Pediatría (English Edition)*, *95*(4), 276.e1-276.e11. https://doi.org/10.1016/j.anpede.2021.07.002

Casellas Vidal, D., & Castan Campanera, A. (2017). Pharmacologic management of drooling in children. Our experience at the Cerebral Palsy Unit, Hospital Josep Trueta (Girona, Spain). *European Journal of Paediatric Neurology*, *21*, e200. https://doi.org/10.10-16/j.ejpn.2017.04.1065

Caselli, T. B., Lomazi, E. A., Montenegro, M. A. S., & Bellomo-Brandão, M. A. (2017). Assessment of nutritional status of children and adolescents with spastic quadriplegic cerebral palsy. *Arquivos de Gastroenterologia*, *54*(3), 201–205. https://doi.org/-10.1590/s0004-2803.201700000-32

Cavo, F., & kurti, A. (2017). The Quality of Life at Disabled Child's Parents. *European Psychiatry*, *41*(S1), s784–s785. https://doi.org/10.1016/j.eurpsy.2017.01.1497

Chaléat-Valayer, E., Porte, M., Buchet-Poyau, K., Roumenoff-Turcant, F., D'Anjou, M. C., Boulay, C., Bernard, J. C., & Touzet, S. (2016). Management of drooling in children with cerebral palsy: A French survey. *European Journal of Paediatric Neurology*, *20*(4), 524–531. https://doi.org/10.1016/j.ejpn.2016.-04.010

Chen, T., & Daniel, S. J. (2021). Is bib count an accurate quantitative measure of drooling? *International Journal of Pediatric Otorhinolaryngology*, *143*, 110657. https://doi.org/10.1016/j.ijporl.2021.110657

Collins, A., Burton, A., & Fairhurst, C. (2020). Management of drooling in children with cerebral palsy. *Paediatrics and Child Health*, *30*(12), 425–429. https://doi.org/10.1016/j.paed.2020.05.002

Contreras, M. I., García Bauza, C., & Santos, G. (2019). Videogame-based tool for learning motor, cognitive, and socio-emotional domains for children with Intellectual Disability. *Entertainment Computing*, *30*, 100301. https://doi.org/10.1016/j.entcom.2019.100301

Delsing, C. P. A., Bekkers, S., van Hulst, K., Erasmus, C. E., & van den Hoogen, F. J. A. (2019). Unsuccessful submandibular duct surgery for anterior drooling: Surgical failure or parotid gland salivation? *International Journal of Pediatric Otorhinolaryngology*, *123*, 132–137. https://doi.org/10.1016/-j.ijporl.2019.04.036

Dembo, R. S., Huntington, N., Mitra, M., Rudolph, A. E., Lachman, M. E., & Mailick, M. R. (2022). Social network typology and health among parents of children with developmental disabilities: Results from a national study of midlife adults. *Social Science & Medicine*, *292*, 114623. https://doi.org/10.1016/-j.socscimed.2021.114623

Dhungel, B., Tsuguhiko, K., Ochi, M., Gilmour, S., Kachi, Y., & Takehara, K. (2021). Association of child's disability status with father's health outcomes in Japan. *SSM - Population Health*, *16*, 100951. https://doi.org/10.1016/j.ssmph.2021.100951

Dong, X., & Wen, F. (2021). Effects of sara rosenfeldjohnson's oral motor exercises on drooling in children with cerebral palsy. *Wolters Kluwer Health, Inc. on Behalf of the American Academy of Neurology*, *96*(15).

Farajzadeh, A., Dehghanizadeh, M., Maroufizadeh, S., Amini, M., & Shamili, A. (2021). Predictors of mental health among parents of children with cerebral palsy during the COVID-19 pandemic in Iran: A web-based cross-sectional study. *Research in Developmental Disabilities*, *112*, 103890. https://doi.org/10.1016/-j.ridd.2021.103890

Flynn, S. (2021). Convergent identities, compounded risk: Intersectionality and parenting capacity assessment for disabled children. *Children and Youth Services Review*, *129*, 106185. https://doi.org/10.1016/j.child-youth.2021.106185

Foster, B. A., Reynolds, K., Callejo-Black, A., Polensek, N., & Weill, B. C. (2021). Weight outcomes in children with developmental disabilities from a multidisciplinary clinic. *Research in Developmental Disabilities*, *108*, 103809. https://doi.org/10.1016/-j.ridd.2020.103809

Garfinkle, J., Li, P., Boychuck, Z., Bussières, A., & Majnemer, A. (2020). Early Clinical Features of Cerebral Palsy in Children Without Perinatal Risk Factors: A Scoping Review. *Pediatric Neurology*,

102, 56–61. https://doi.org/10.1016/j.pediatrneurol.-2019.07.006

Gómez-Pérez, C., Martori, J. C., Puig Diví, A., Medina Casanovas, J., Vidal Samsó, J., & Font-Llagunes, J. M. (2021). Gait event detection using kinematic data in children with bilateral spastic cerebral palsy. *Clinical Biomechanics*, *90*, 105492. https://doi.-org/10.1016/j.clinbiomech.2021.105492

Gross, P., Gannotti, M., Bailes, A., Horn, S. D., Kean, J., Narayanan, U. G., Oakes, J., & Noritz, G. (2020). Cerebral Palsy Research Network Clinical Registry: Methodology and Baseline Report. *Archives of Rehabilitation Research and Clinical Translation*, *2*(3), 100054. https://doi.org/10.1016/j.arrct.2020.10-0054

Gubbay, A., & Marie Blackmore, A. (2019). Effects of salivary gland botulinum Toxin-A on drooling and respiratory morbidity in children with neurological dysfunction. *International Journal of Pediatric Otorhinolaryngology*, *124*, 124–128. https://doi.org/-10.1016/j.ijporl.2019.05.044

Gulati, S., & Sondhi, V. (2018). Cerebral Palsy: An Overview. *The Indian Journal of Pediatrics*, *85*(11), 1006–1016. https://doi.org/10.1007/s12098-017-24-75-1

Gupta, R. (2001). Cerebral palsy: not always what it seems. *Archives of Disease in Childhood*, *85*(5), 356–360. https://doi.org/10.1136/adc.85.5.356

Gutierrez, G., Siqueira, V., Loyola-Rodriguez, J., Diniz, M., Guare, R., Ferreira, A., & Santos, M. (2019). Effects of treatments for drooling on caries risk in children and adolescents with cerebral palsy. *Medicina Oral Patología Oral y Cirugia Bucal*, 0–0. https:-//doi.org/10.4317/medoral.22729

Hammam, N., Becher, H., Andersen, J., Manns, P. J., Whittaker, J. L., & Pritchard, L. (2021). Early indicators of cardiovascular disease are evident in children and adolescents with cerebral palsy. *Disability and Health Journal*, *14*(4), 101112. https://doi.org/10.1016/j.dhjo.2021.101112

Hoyle, J. N., Laditka, J. N., & Laditka, S. B. (2021). Mental health risks of parents of children with developmental disabilities: A nationally representative study in the United States. *Disability and Health Journal*, *14*(2), 101020. https://doi.org/10.1016/j.dhjo.2020.101020

Irwin, L., Jesmont, C., & Basu, A. (2019). A systematic review and meta-analysis of the effectiveness of interventions to improve psychological wellbeing in the parents of children with cerebral palsy. *Research in Developmental Disabilities*, *95*, 103511. https://doi.org/10.1016/j.ridd.2019.103511

Jackman, M., Sakzewski, L., Morgan, C., Boyd, R. N., Brennan, S. E., Langdon, K., Toovey, R. A. M., Greaves, S., Thorley, M., & Novak, I. (2022). Interventions to improve physical function for children and young people with cerebral palsy: international clinical practice guideline. *Developmental Medicine & Child Neurology*, *64*(5), 536–549.

Jahan, I., Muhit, M., Hardianto, D., Laryea, F., Amponsah, S. K., Chhetri, A. B., Smithers-Sheedy, H., McIntyre, S., Badawi, N., & Khandaker, G. (2021). Epidemiology of Malnutrition among Children with Cerebral Palsy in Low- and Middle-Income Countries: Findings from the Global LMIC CP Register. *Nutrients*, *13*(11), 3676. https://doi.org/10.3390/nu13113676

Johnson, B. A., Salzberg, C., MacWilliams, B. A., Shuckra, A. L., & D'Astous, J. L. (2014). Plyometric Training. *Pediatric Physical Therapy*, *26*(2), 169–179. https://doi.org/10.1097/PEP.0000000000000012

Kamate, M., Mittal, N., & Metgud, D. (2018). Effect of Risperidone on the Motor and Functional Disability in Children With Choreoathetoid Cerebral Palsy. *Pediatric Neurology*, *84*, 46–48. https://doi.org/10.-1016/j.pediatrneurol.2018.04.002

Khajuria, S., Ng, K. F., & Jefferson, R. J. (2020). What is the effectiveness and safety of different interventions in managing drooling in children with cerebral palsy? *Archives of Disease in Childhood*, *105*(9), 906–910. https://doi.org/10.1136/archdischild-2020-319309

Ku, B., & Jin, J. (2022). Understanding parental physical activity support in parents of children with developmental disabilities across two different countries. *Research in Developmental Disabilities*, *120*, 104140. https://doi.org/10.1016/j.ridd.2021.104-140

Langlois, C., Tucker, B. V., Sawatzky, A. N., Reed, A., & Boliek, C. A. (2020). Effects of an intensive voice treatment on articulatory function and speech intelligibility in children with motor speech disorders: A phase one study. *Journal of Communication Disorders*, *86*, 106003. https://doi.org/10.1016/-j.jcomdis.2020.106003

Lashkari, H. P. (2019). Juvenile myelomonocytic leukemia with 4Q deletion in an intellectually disabled child rare case report. *Pediatric Hematology Oncology Journal*, *4*(2).

Lee, J. H. (2021). Effectiveness of group art therapy for mothers of children with disabilities. *The Arts in Psychotherapy*, *73*, 101754. https://doi.org/10.1016/-j.aip.2020.101754

Levitt, S., & Addison, A. (2018). *Treatment of cerebral palsy and motor delay*. John Wiley & Sons.

Lima, V. L. C. C., Cosmo, C., Lima, K. B., Martins, M. A., Rossi, S. G., Collange Grecco, L. A., Muzskat, M., & Brandão de Ávila, C. R. (2022). Neuromodulation: A combined-therapy protocol for speech rehabilitation in a child with cerebral palsy. *Journal of Bodywork and Movement Therapies*, *29*, 10–15. https://doi.-org/10.1016/j.jbmt.2021.09.002

Limbrock, J. (2021). Oral motor problems–what you may recommend to your little patients. *Medical Research Archives*, *9*(8).

Longo, E., Badia, M., Begoña Orgaz, M., & Gómez-Vela, M. (2017). Comparing parent and child reports of health-related quality of life and their relationship with leisure participation in children and adolescents with Cerebral Palsy. *Research in Developmental Disabilities*, *71*, 214–222. https://doi.org/10.1016/-j.ridd.2017.09.020

Longo, E., Regalado, I. C. R., Galvão, E. R. V. P., Ferreira, H. N. C., Badia, M., & Baz, B. O. (2020). I want to play: Children with cerebral palsy talk about their experiences on barriers and facilitators to participation in leisure activities. *Pediatric Physical Therapy*, *32*(3), 190–200.

Lubis, M. R., & Damri, D. (2018). Pelaksanaan Keterampilan Kehidupan Sehari-hari dalam Mencuci Pakaian Kelayan Gangguan Penglihatan Kelas Persiapan X di PSBN Tuah Sakato Padang. *Jurnal Penelitian Pendidikan Khusus*, *6*(2), 70–77.

Maggioni, L., & Araújo, C. M. T. de. (2020). Guidelines and practices on feeding children with cerebral palsy. *Journal of Human Growth and Development*, *30*(1), 65–74. https://doi.org/10.7322/jhgd.v30.9974

Mak, C. K., Whittingham, K., & Boyd, R. N. (2019). Experiences of children and parents in MiYoga, an embodied mindfulness yoga program for cerebral palsy: A mixed method study. *Complementary Therapies in Clinical Practice*, *34*, 208–216. https://doi.org/10.1016/j.ctcp.2018.12.006

Marinone, S., Gaynor, W., Johnston, J., & Mahadevan, M. (2017). Castillo Morales Appliance Therapy in the treatment of drooling children. *International Journal of Pediatric Otorhinolaryngology*, *103*, 129–132. https://doi.org/10.1016/j.ijporl.2017.10.020

Marpole, R., Blackmore, A. M., Gibson, N., Cooper, M. S., Langdon, K., & Wilson, A. C. (2020). Evaluation and Management of Respiratory Illness in Children With Cerebral Palsy. *Frontiers in Pediatrics*, *8*. https://doi.-org/10.3389/fped.2020.00333

Mårtensson, U., Cederlund, M., Jenholt Nolbris, M., Mellgren, K., Wijk, H., & Nilsson, S. (2021). Experiences before and after nasogastric and gastrostomy tube insertion with emphasis on mealtimes: a case study of an adolescent with cerebral palsy. *International Journal of Qualitative Studies on Health and Well-Being*, *16*(1). https://doi.org/10.-1080/17482631.2021.1942415

Martino, S., Agbelie, C.-M., Mei, W., & Morelli, P. J. (2022). Inclusion team science improves the participation of children with disabilities in pediatric obesity programs. *Disability and Health Journal*, *15*(1), 101186. https://doi.org/10.1016/j.dhjo.2021.101186

McDowell, B. C., Duffy, C., & Lundy, C. (2017). Pain report and musculoskeletal impairment in young people with severe forms of cerebral palsy: A population-based series. *Research in Developmental Disabilities*, *60*, 277–284. https://doi.org/10.1016/j.ridd.2016.10.006

McInerney, M., Imms, C., Carding, P. N., & Reddihough, D. S. (2021). Evaluation of an intensive voice treatment to reduce anterior drooling in children with cerebral palsy: Protocol for a concurrent multiple-baseline, single case experimental design study. *Contemporary Clinical Trials Communications*, *24*, 100872. https:-//doi.org/10.1016/j.conctc.2021.100872

Mei, C., Hodgson, M., Reilly, S., Fern, B., Reddihough, D., Mensah, F., Pennington, L., Losche, A., & Morgan, A. (2022). Oromotor dysfunction in minimally verbal children with cerebral palsy: characteristics and associated factors. *Disability and Rehabilitation*, *44*(6), 973–981. https://doi.org/10.1080/09638288.-2020.1788179

Mikami, D. L. Y., Furia, C. L. B., & Welker, A. F. (2019). Adding Kinesio Taping of the orbicularis oris muscles to speech therapy rapidly improves drooling in children with neurological disorders. *Developmental Neurorehabilitation*, *22*(1), 13–18. https://doi.org/10.-1080/17518423.2017.1368729

Morris, C., Blake, S., Stimson, A., Borek, A., & Maguire, K. (2016). Resources for parents raising a disabled child in the UK. *Paediatrics and Child Health*, *26*(9), 406–408. https://doi.org/10.1016/j.paed.2016.04.019

Mutlu, A., Kara, Ö. K., Livanelioğlu, A., Karahan, S., Alkan, H., Yardımcı, B. N., & Hidecker, M. J. C. (2018). Agreement between parents and clinicians on the communication function levels and relationship of classification systems of children with cerebral palsy. *Disability and Health Journal*, *11*(2), 281–286. https://doi.org/10.1016/j.dhjo.2017.11.001

Myles, D. (2020). *Critical Review: The Effectiveness of Oral Sensorimotor Therapy in the Treatment of Drooling in Children with Cerebral palsy*.

Nascimento, D., Carmona, J., Mestre, T., Ferreira, J. J., & Guimarães, I. (2021). Drooling rating scales in Parkinson's disease: A systematic review. *Parkinsonism & Related Disorders*, *91*, 173–180. https://doi.org/10.1016/j.parkreldis.2021.09.012

Novak, I., Morgan, C., Fahey, M., Finch-Edmondson, M., Galea, C., Hines, A., Langdon, K., Namara, M. M., Paton, M. C. B., & Popat, H. (2020). State of the evidence traffic lights 2019: systematic review of interventions for preventing and treating children with cerebral palsy. *Current Neurology and Neuroscience Reports*, *20*, 1–21.

Nurhastuti, N., Kasiyati, K., Zulmiyetri, Z., & Irdamurni, I. (2019). Need Assessment of Parents of Children with Cerebral Palsy Observed from Family Counselling. *International Journal of Innovation, Creativity and Change (IJICC)*, *5*(6), 197–207.

Papadimitriou, I., Dalivigka, Z., Outsika, C., Scarmeas, N., & Pons, R. (2021). Dystonia assessment in children with cerebral palsy and periventricular leukomalacia. *European Journal of Paediatric Neurology*, *32*, 8–15.

Patel, D. R., Neelakantan, M., Pandher, K., & Merrick, J. (2020). Cerebral palsy in children: a clinical overview. *Translational Pediatrics*, *9*(S1), S125–S135. https://doi.org/10.21037/tp.2020.01.01

Pearson, T. S., Pons, R., Ghaoui, R., & Sue, C. M. (2019). Genetic mimics of cerebral palsy. *Movement Disorders*, *34*(5), 625–636. https://doi.org/10.1002/-mds.27655

Peña, C. M., & Payne, A. (2022). Parental experiences of adopting healthy lifestyles for children with disabilities living with overweight and obesity. *Disability and Health Journal*, *15*(1), 101215. https://doi.org/10.1016/j.dhjo.2021.101215

Polack, S., Adams, M., O'banion, D., Baltussen, M., Asante, S., Kerac, M., Gladstone, M., & Zuurmond, M. (2018). Children with cerebral palsy in Ghana: malnutrition, feeding challenges, and caregiver quality of life. *Developmental Medicine & Child Neurology*, *60*(9), 914–921. https://doi.org/10.1111/-dmcn.13797

PutrI, I. C., Damri, D., Engkizar, E., Asril, Z., & Efendi, E. (2020). The Use of Android Game to Improve Impaired Hearing Student Vocabulary Mastery. *Journal of Educational Research and Evaluation*, *9*(2), 85–93. https://doi.org/10.15294/jere.v9i2.44744

Ratmawati, Y. (2018). *Oral Massage Exercise*.

Ravi, C., Glass, N. E., Josyabhatla, R., Monteiro, I., Sinha, V., & Kondamudi, N. (2020). A Rare Cause of Septic Shock in the Emergency Department in an Intellectually-Disabled Child. *The Journal of Emergency Medicine*, *58*(2), e79–e82. https://doi.org/-10.1016/j.jemermed.2019.09.031

Rensfeldt Flink, A., Boström, P., Gillberg, C., Lichtenstein, P., Lundström, S., & Åsberg Johnels, J. (2021). Exploring co-occurrence of sensory, motor, and neurodevelopmental problems and epilepsy in children with severe-profound intellectual disability. *Research in Developmental Disabilities*, *119*, 104114. https://doi.org/10.1016/j.ridd.2021.104114

Rocha, M. M., Martimbianco, A. L. C., Beltramin, R. Z., Horliana, A. C. R. T., Santos, E. M., Mesquita-Ferrari, R. A., Fernandes, K. P. S., Motta, L. J., Turcio, K. H., Gonçalves, M. L. L., & Bussadori, S. K. (2022). Non-surgical interventions for treating masticatory muscular spasticity in patients with cerebral palsy. A systematic review of randomized clinical trials. *Journal of Bodywork and Movement Therapies*, *29*, 68–73. https://doi.org/10.1016/j.jbmt.2021.09.020

Rotteval. (2011). Effect of oral motor stimulation on drooling. *Journal of the American Academy of Pediatrics*, *10*(1), 456–459.

Ruiz Brunner, M. de las M., Cieri, M. E., Rodriguez Marco, M. P., Schroeder, A. S., & Cuestas, E. (2020). Nutritional status of children with cerebral palsy attending rehabilitation centers. *Developmental Medicine & Child Neurology*, *62*(12), 1383–1388. https://doi.org/10.1111/dmcn.14667

Sadowska, M., Sarecka-Hujar, B., & Kopyta, I. (2020). Cerebral Palsy: Current Opinions on Definition, Epidemiology, Risk Factors, Classification and Treatment Options . *Neuropsychiatric Disease and Treatment*, *Volume 16*, 1505–1518. https://-doi.org/10.2147/NDT.S235165

Santos, J. S., Giacheti, C. M., Dornelas, L. S., Silva, N. C., Souza, A. L. D. M., Guissoni Campos, L. M., & Pinato, L. (2018). Day/night melatonin content in cerebral palsy. *Neuroscience Letters*, *686*, 23–27. https://doi.org/10.1016/j.neulet.2018.08.045

Shim, D., Park, D., Yoo, B., Choi, J., Hong, J., Choi, T. Y., Park, E. S., & Rha, D. (2022). Evaluation of sitting and standing postural balance in cerebral palsy by center-of-pressure measurement using force plates: comparison with clinical measurements. *Gait & Posture*, *92*, 110–115. https://doi.org/10.1016/j.gaitpost.2021.11.024

Silva, B. N. S., Brandt, K. G., Cabral, P. C., Mota, V. V. D. L., Camara, M. M. A., & Antunes, M. M. De C. (2017). Malnutrition frequency among cerebral palsy children: Differences in onset of nutritional intervention before or after the age of five years. *Revista de Nutrição*, *30*(6), 713–722. https://doi.org/-10.1590/1678-98652017000600004

Sousa, S., Rocha, M., Patrão, F., Pereira, G., Reis, S., Horta, P., Salgado, C., & Santos, M. dos. (2018). Submandibular duct transposition for drooling in children: A Casuistic review and evaluation of satisfaction grade. *International Journal of Pediatric Otorhinolaryngology*, *113*, 58–61. https://doi.org/10.-1016/j.ijporl.2018.07.023

Souza, A. C. S. de, Santos, J. A. T., Prieto, A. V., Vieira Costa, P. H., Silva, R. da, & Gutierres Filho, P. J. B. (2021). Therapeutic interventions efficacy on gross motor function in children with cerebral palsy. *Revista Neurociências*, *29*, 1–29. https://doi.org/10.34024/-rnc.2021.v29.11326

Verschuren, O., Smorenburg, A. R. P., Luiking, Y., Bell, K., Barber, L., & Peterson, M. D. (2018). Determinants of muscle preservation in individuals with cerebral palsy across the lifespan: a narrative literature review. *Journal of Cachexia, Sarcopenia and Muscle*, *9*(3), 453–464. https://doi.org/10.1002/jcsm.12287

Ward, K. D., Chiarello, L. A., Bartlett, D. J., Palisano, R. J., McCoy, S. W., & Avery, L. (2014). Ease of Caregiving for Children: A measure of parent perceptions of the physical demands of caregiving for young children with cerebral palsy. *Research in Developmental Disabilities*, *35*(12), 3403–3415. https://doi.org/10.1016/j.ridd.2014.08.023

Widman-Valencia, M. E., Gongora-Meza, L. F., Rubio-Zapata, H., Zapata-Vázquez, R. E., Lizama, E. V., Salomón, M. R., & Estrella-Castillo, D. (2021). Oral Motor Treatment Efficacy: Feeding and Swallowing Skills in Children with Cerebral Palsy. *Behavioural Neurology*, *2021*, 1–6. https://doi.org/10.1155/2021/-6299462

Xia, C., Zheng, H., Zhang, S., Tang, L., Jing, Q., Chen, G., Sun, M., & Lu, J. (2021). Modifiable personal and environmental factors associated with anxiety in family caregivers of children with disabilities: A comparison between parents and grandparents. *Journal of Affective Disorders*, *295*, 604–611. https://doi.org/10.1016/j.jad.2021.08.101

Yi, Y. G., Oh, B.-M., Seo, H. G., Shin, H.-I., & Bang, M. S. (2019). Dysphagia-Related Quality of Life in Adults with Cerebral Palsy on Full Oral Diet Without Enteral Nutrition. *Dysphagia*, *34*(2), 201–209. https://doi.-org/10.1007/s00455-018-09972-7

Yilmaz, S., Basar, P., & Gisel, E. G. (2004). Assessment of feeding performance in patients with cerebral palsy. *International Journal of Rehabilitation Research*, *27*(4), 325–329. https://doi.org/10.1097/00004356-200412000-00013

Zhang, Y., Li, R., Miao, X., Cheng, L. J., & Lau, Y. (2022). Virtual motor training to improve the activities of daily living, hand grip, and gross motor function among children with cerebral palsy: A meta-regression analysis. *Gait & Posture*, *91*, 297–305. https://doi.org/10.1016/j.gaitpost.2021.10.046